ON

THE EFFICACY

OF THE

BROMIDE OF POTASSIUM

IN

EPILEPSY AND CERTAIN PSYCHICAL AFFECTIONS,

BY

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INTRODUCTION.

DR. BLAIR has remarked:—"One of the most distinguished privileges which Providence has conferred "upon mankind is their power of communicating their "thoughts to one another. Destitute of this power, reason "would be a solitary, and in some measure an unavailing "principle. Speech is the great instrument by which man "becomes beneficial to man; and it is to the intercourse and "transmission of thoughts, by means of speech, that we are "chiefly indebted for the improvement of thought itself. "Small are the advantages which a single unassisted individual can make towards perfecting any of his powers. "What we call human reason, is not the effort or ability "of one so much as it is the result of the reason of many, "arising from lights mutually communicated, in consequence "of discourse and writing."

A vast deal has lately been said and written of the efficacy of the BROMIDE of POTASSIUM in Epilepsy and other nervous and psychical affections, and as "what we call human reason (or perfection) is not the effort or ability of one so much as it is the result of the reason of many, arising from lights mutually communicated, in consequence of discourse and writing," I am encouraged by this dogma, propounded by so eminent a rhetorician as Dr. Blair, to write a brief account of a long series of experiments which I have made as to the action of BROMIDE of POTASSIUM, although the subject may seem to be somewhat worn.

Of all the various classes of cases found in our County Lunatic Asylums, none give so much trouble and annoyance, and have so little of interest connected with them as the Epileptic Maniacs. If a black eye is given, it is sure to be by an Epileptic—if two patients fall to fisty-cuffs, the chances are, one or both or Epileptics. If furniture is broken, the probability is, an Epileptic has been the cause of the mischief. Joined to this they are irascible to a degree, always dissatisfied, quarrelling, and fighting; they half fill the list of wet and dirty cases; they cannot be trusted day or night without fear of some *contretemps* occurring. Purgatives only relieve them for a time; anodynes are worse than useless; antimony and bleeding produce positive harm; and, finally, no remedy has ever been brought forward that has, in their case, been productive of any permanent benefit; consequently, the study, care, or treatment of their disease is by far the least interesting of any disease to be met with within the walls of asylums, and as a rule their habits and dispositions are such that, when a certain point has been reached, they admit of but slight amelioration from moral treatment. The above (to asylum *habitués*) truisms have impressed me so strongly ever since I have had anything to do with the management of the insane, that I have eagerly tried every drug that has been brought forward from time to time for the cure or amelioration of Epilepsy, and after using one remedy after another without the least success, I began to despair of obtaining the end desired, or anything approaching it. It was, therefore, with feelings of the most complete scepticism that I read of the reputed efficacy of Bromide of Potassium, although I resolved to give it a trial as I had done other medicines.

I mention this in order that it may not be thought that I had in any way prejudged my subject, or approached my experiments, determined that they should succeed—quite the

contrary. Cicero said many ages ago—*Plura enim multa hominis, judicant odio, aut amare, aut cupiditate, aut iracundia, aut dolore, aut lœtitia, aut spe, aut timore, aut terrore, aut alia alique, permotione mentis, quam veritate,*—and this failing of mankind I have always endeavoured to bear in mind.

We have been told that method is the light of a subject, and expression is the life of it. In order, therefore, somewhat to methodise my theme, I shall proceed to consider it under the following heads :—

Firstly.—I shall give a brief description of my experiments with the Bromide in Epilepsy.

Secondly.—I shall collect the results of these experiments into a series of Tables, with remarks on each Table.

Thirdly.—I shall detail the results of the trial of the medicine in Psychical cases, not Epileptic; and

Fourthly.—Endeavour to describe the rationale of the action of the medicine.

PART I.

On the 1st of January, 1864, I commenced to give nearly all the Epileptics confined in the Northampton General Lunatic Asylum five grains of Bromide of Potassium twice daily, and I continued its administration for five months, in most cases increasing the dose after awhile to ten grains *bis die*.

This wholesale use of the drug has been ridiculed, but as, although most writers were agreed that benefit accrued in certain cases from its administration, scarcely any two were of the same opinion as to the class of case most benefitted, I considered that the best way to arrive at a right conclusion was not to pick my cases, but to take all Epileptics within reach, whether male or female, young or old, strong or feeble, whether suffering from "*le haut mal*," "*le petit mal*," or hysterical epilepsy, and then by watching carefully each individual case, and recording the various results from day to day, endeavour to arrive at a conclusion as to those peculiar classes of Epileptics most likely to be benefitted by the medicine. Then, if any *did* really benefit (a result I strongly doubted) to push the administration of the drug to the strongest possible limits in order, if possible, to effect a cure.

A distinguished writer on Epilepsy, in the pages of the *British Medical Journal*, has strongly objected to the above plan of proceeding, and says,—"Some time ago a proposal, very laudable in the abstract, was made to bring together

from various sources, and tabulate, a large number of cases of pneumonia; and by comparison to deduce the results of treatment. It was not surprising that no conclusions were arrived at." And this would seem to be his reason for the following conclusions: "It would accordingly be scarcely fair, either to the disease or to the remedy to be tested, to take at hap-hazard a given number of cases characterised by the Epileptic paroxysm, and to determine by the result whether or not the remedy deserved our confidence."

But surely the two cases are not parallel: in the one you have given a disease to find out the best mode of treatment by collecting together a number of persons suffering from said disease, and treating each with a different mode; but in the latter you have given a certain drug and a certain disease, to find out whether the drug has any influence on the disease by collecting together a number of persons suffering from said disease, and treating them all alike. The former must necessarily be faulty, because as there are many varieties of constitution, what may suit A suffering from a certain disease, may not suit B although afflicted with the same complaint. But in the latter, the more varied the constitution, &c., the better, because you are more likely to light on some in which the medicine will be beneficial. When the five months were up I added all the fits together and was so surprised at the diminution in the number of fits as compared with those of the previous five months that I could no longer doubt the efficacy of the medicine; but in order to be quite sure, I omitted the medicine for five months, and then administered it for another five months to the same epileptics as before, and with the same results.

Since the termination of the last experimental period I have continued its use to those epileptics who seemed most to benefit, but cannot boast of anything beyond amelioration in their malady. This want of success may possibly be due to the

very unpromising nature of most of the cases under treatment, for although many were young and had not been affected long by the disease, and none manifested symptoms of any distinct cerebral lesion, all were more or less the subjects of occasional maniacal paroxysms. Some were old, and had been in the Asylum for years, some were imbecile, some during their interparoxysmal periods were perfectly rational and, saving the abnormal irritability to which all epileptics are subject, apparently sound in intellect and body, and others were both feeble in mind and body.

Besides this class, however, I have administered the drug to all cases that have come under my notice in any way marked by exalted action of the function of the reflex nervous system, or by undue excitability of the generative organs, or by exaggerated impressibility, or increased motor excitability of the chief reflex centre.

So that, in all, the cases under treatment have numbered upwards of 80. In many I have seen much good accrue, in some no benefit result, and in a few there was palpable and positive harm. [*See Table I.*]

"Reading some remarks in a late number of the *Lancet* on the action of Bromide of Potassium, and having tried the drug extensively for the last five months, it has occurred to me that a few observations on its action may not be unacceptable to the readers of the *Medical Times and Gazette*.

Through the kindness of Dr. Wing, the Superintendent of the Northampton General Lunatic Asylum, I have been enabled freely to try it in as many as thirty-seven cases. These were all epileptics, and I append a table showing in one column the number of fits registered during the last five months of last year, when they were taking no medicine, and in the other the number registered during the first five months of this year, when each case was taking on an average ten grains of the salt twice daily.

TABLE I.

MALES.			FEMALES.		
Initials.	Fits during last five months of 1863.	Fits during first five months of 1864.	Initials.	Fits during last five months of 1863.	Fits during first five months of 1864.
W. M.	148	107	E. H.	23	19
J. R.	69	45	E. J.	25	37
J. B.	32	21	M. K.	60	27
J. J.	256	91	E. H.	29	9
W. L.	55	37	E. W.	50	56
S. L. B.	19	24	C. T.	17	23
T. H.	40	29	T. A.	82	85
C. B.	52	46	M. L.	20	5
R. H.	112	102	A. S.	41	22
G. M.	47	64	E. G.	46	53
W. W.	36	37	H. W.	1	0
J. L. M.	33	26	M. L.	57	8
T. G.	13	4	A. C.	11	22
R. G.	30	9	M. C.	1	0
J. K.	25	16	S. A. P.	577	556
E. E.	8	14	S. A.	1	0
W. O.	10	10	S. S.	73	37
W. M.	29	14	E. G.	13	11
J. J.	8	10			
	1012	706		1127	970

This Table gives briefly the statistics of my first experiments. I published it in the *Medical Times and Gazette* for July 23rd, 1865, accompanied by the following remarks :—

I may premise that the greatest care was taken that, for the whole of the ten months during which these thirty-seven patients were under observation, their lives, with the exception of taking the Bromide during the last five, should be spent under as nearly as possible the same circumstances.

From this table it will be seen that the number of fits amongst the males decreased by 306, and amongst the females by 157; that all the patients but five males and six females were benefitted more or less; that the improvement was, however, more apparent amongst the males than the females; but that no patient of either sex was entirely cured. It is right to remark that all these patients are more or less insane, and many of them extremely violent at times.

Mr. Henry Behrend, the writer in the *Lancet*, confines his remarks to the powerful effects this drug has on "insomnia and restlessness, accompanied and dependent on nervous excitement and irritability," and this statement my own observations fully corroborate; but I have not the same confidence in recommending, as he does, the unfettered use of half-drachm doses; for in several of the cases recorded above it was found necessary to reduce even the average—ten grains twice daily; and in the majority the first use of the drug was accompanied by sickness and lassitude.

Those Patients on whom the drug seemed to take the most effect in this way, were seven in number. After using it for a few days the action of their hearts became slow and fluttering, the eye lost its lustre, the skin was cold and clammy; they had a wearied anxious look, and complained of headache, and sickness, and shivering, and of unusual weakness at the knees, and invariably sat crouched up by the fireside all day, evidently devoid of all energy and resolution. Curiously enough, in all the cases thus powerfully affected, the fits were increased instead of diminished.

The drug excited hypercatharsis in two Patients, which was repeated again and again each time it was renewed. The fits in both these cases were diminished; in the case of the female from 41 to 22.

One Patient, S. A., was apparently, five months ago, one of the most healthy persons in the house—fat, strong, and rosy; but soon after taking the Bromide, the peculiar symptoms described above developed themselves, and the medicine was immediately omitted; but, although she rallied a little, her system never thoroughly recovered itself. Tubercles became developed in the lungs, and she died towards the end of April. Truth compels me to confess that I have my doubts whether the Bromide of Potassium had not something to do with this poor girl's death; at all events, this occurrence has made me very watchful when using it.

On the other hand, considerable benefit has arisen from its use in many cases. It undoubtedly exercises a most powerful influence on the nervous system, and often soothes the irritability of epilepsy, even if it does not diminish the frequency of the fits, when no other medicine will take any effect, and in this way will be found a most valuable adjunct to the repertory of an Asylum Dispensary. I cannot think that it has much effect, however, on the sexual system; for in some cases, where it was used more especially with that view, there was no apparent result; but of its powers in inducing sleep in cases dependent on nervous irritability, there can be no doubt, and often from ten to twenty grains twice daily will suffice to effect this."

Further experience has given me no occasion to doubt the correctness of these views.

In order, however, to be quite certain of the beneficial effect of the medicine, I determined to let five months go by, and then give the medicine for another five months. This I have done, with the following results:—

TABLE II.

MALES.			FEMALES.		
Initials.	Fits in Third Five Months (not taking medicine.)	Fits in Fourth Five Months (taking medicine.)	Initials.	Fits in Third Five Months (not taking medicine.)	Fits in Fourth Five Months (taking medicine.)
W. M.	65	28	S. A. P.	485	351
J. R.	55	54	E. J.	57	29
J. B.	28	19	E. W.	67	44
J. J.	171	88	S. S.	55	53
W. L.	65	50	C. S.	27	20
S. L. B.	23	30	E. H.	21	17
T. H.	36	18	W. L.	59	22
C. B.	34	32	A. C.	21	8
R. H.	120	90	E. G.	2	11
W. W.	51	61	M. K.	16	18
J. L. M.	28	17	M. L.	11	10
T. G.	4	2	H. W.	3	5
R. G.	19	4	A. S.	43	46
J. K.	17	23	E. G.	42	48
E. E.	14	15	S. A.	1	1
W. O.	16	42	E. T.	63	32
W. M.	31	19			
J. J.	5	6			
W. A.	10	2			
T. L.	90	92			
Totals.	882	693		973	715

From this Table it will be seen that amongst the Males the number of fits decreased by 189, that 13 patients were benefitted by the medicine, and that in 7 there was no improvement. That amongst the Females the number of fits was decreased by 258, that 9 patients were benefitted, and 6 were unimproved.

TABLE III (a).

MALES.

Initials.	Third Five Months (not taking Medicine).			Fourth Five Months (taking Medicine).		
	Day.	Night.	Total.	Day.	Night.	Total.
W. M.	15	50	65	5	23	28
J. R.	36	19	55	35	19	54
J. B.	22	6	28	16	3	19
J. J.	170	5	175	69	9	88
W. L.	61	0	61	48	2	50
S. L. B.	20	3	23	28	2	30
T. H.	34	2	36	13	5	18
C. B.	33	1	34	32	0	32
R. H.	80	40	120	61	29	90
W. W.	17	34	51	15	46	61
J. L. M.	20	8	28	10	7	17
T. G.	3	1	4	2	0	2
R. G.	10	9	19	0	4	4
J. K.	14	3	17	20	3	23
E. E.	12	2	14	13	2	15
W. O.	6	10	16	14	28	42
W. M.	4	27	31	2	17	19
J. J.	5	0	5	6	0	6
W. A.	10	0	10	2	0	2
T. L.	82	8	90	85	8	93
	654	228	882	486	207	693

TABLE III (b).

FEMALES.

Initials.	Third Five Months (not taking Medicine).			Fourth Five Months (taking Medicine).		
	Day.	Night.	Total.	Day.	Night.	Total.
S. A. P.	345	140	485	151	200	351
E. J.	50	7	57	26	3	29
E. W.	40	27	67	24	20	44
S. S.	5	50	55	6	47	53
C. S.	57	0	27	20	0	20
C. H.	11	10	21	14	3	17
M. L.	28	31	59	10	12	22
A. C.	8	3	11	5	3	8
E. G.	2	0	2	3	8	11
M. K.	7	9	16	3	15	18
M. L.	I	10	11	2	8	10
H. W.	1	2	3	2	3	5
E. G.	18	24	42	38	10	48
S. A.	1	0	1	1	0	1
E. F.	23	40	63	13	19	32
	597	353	930	318	351	669

There is a elass of epilepties who are generally (sometimes *always*) attacked by the epileptic paroxysm during the night, and as the Bromide of Potassium had been brought forward in the pages of the *Lancet* as an efficaeious sleep-produeer, I took the trouble, during the seeond stage of my experiments, to separate the fits oeeurring during the day from those taking plaee in the hours usually allotted to sleep, and the result is embodied in Table IIIb. Curiously enough, it will be seen that both amongst the males and the females, the deerease in the number of fits has taken plaee in the day, whilst those during the night were of nearly equal number when the patients were taking medieine as when they were not; and moreover it will be found that those patients who were most frequently attacked during the night, were those who reeeived least benefit from the use of the medieine.

Thus S. S. and W. W., whose fits oceur almost invariably during the night time, were not in the least the better. Now both these Patients (the former a female, the latter a male) were strongly addieted to evil praetiees, and I have always put down the greater frequeney of their fits during the night season to their more eonstantly giving way to their bad habits when in bed These faets I eannot but hold as very good evidenee of the assertion I have already ventured upon, and whieh has been strongly objeeted to, that Bromide of Potassium has no speeial influence over the generative organs. Dr. Criehton Browne, in a pamphlet on "The aetion of the Bromide of Potassium upon the Nervous System," published sinee I eommeneed writing these remarks, is very mueh inclined to allow it strong antaphrodisiac properties, although I cannot quite pereeive upon what data. He owns that he had had "no opportunity of trying the Bromide of Potassium in simple nymphomania," although he had used it without effeet in one Patient "who was in a state

of mania following upon melancholia, and in whom there was presumed to be excitement of the sexual feelings, on account of the extraordinary obscenity of the language which she used. Now I have tried it in every variety of uterine affection that has come within my reach, including nymphomania, satyriasis, menorrhagia, amenorrhœa, dysmenorrhœa, &c., &c., but without perceiving the least benefit accrue. Dr. Browne remarks on my placing dependance "upon the statement of chronic epileptics," and he would be quite just in his strictures if it were so, but I have been careful to avoid this. I have relied on facts, not statements; and these facts tell me that neither the male nor female masturbator is improved in his or her habits, that neither does the discharge cease in menorrhagia, nor the catamenia flow in amenorrhœa, from the use of the Bromide of Potassium in even the largest doses; and, furthermore, that whatever the reduction of fibrous uterine tumours in those ladies who visit Kreugnach to drink its waters may be due to, it certainly is not owing to the fact that these waters are impregnated with Bromide of Potassium.

I had under treatment at one time two cases that seemed especially well adapted for favouring the antaphrodisiac properties of this medicine. They were both young strong healthy girls, the one a lady, the other a domestic servant. Both were admitted into the Asylum at Northampton, suffering from simple mania without any positive delusion. They were lively, excitable, restless, and extremely volatile, often able to command their faculties sufficiently to converse calmly and rationally for a few minutes on any ordinary subject, but liable at any moment to burst out laughing, or into a fit of tears without any visible cause, or to begin to swear, and rave, and scream; both were fine handsome fully developed young women, both were most indecent in language, voice, and gesture, and both openly practised self-pollution.

The Bromide of Potassium was given to them in doses of gr. v. *bis die* in a little pure water, and increased up to gr. xx, and although both were much affected by its use, and both became thin and pale, and reduced, and their circulation powerfully controlled (indeed in one case the pulsations were reduced from 90 to 60 beats in a minute), nevertheless they persisted in their bad habits, and their sensuality became if possible more confirmed. The administration of the medicine was persisted in for nearly twelve months in both cases.

Another case in which I tried it, was that of a married lady nearly 40 years of age, in a state of chronic mania, and at the same time I made some observations as to the influence of the Bromide on the heart's action. This lady was extremely amative, fell in love with every person of the opposite sex she encountered, and was in the habit of writing the most obscene letters to all her male acquaintances. Her pulse was habitually about 90,—tolerably strong and full. Being of a strong constitution, I commenced by giving her gr. xv. *bis die.* About an hour after the third dose, her pulse was 76,—two hours from that time it had almost regained its accustomed frequency, but in an hour's time from the fourth dose, it was reduced to 70, and on one occasion during the first week it was nearly as low as 60.

Combined with this decrease in the circulation there was as might be expected marked langour and ennui almost amounting to debility, and she seemed inclined to maintain the recumbent posture constantly, but I cannot say that her lascivious wishes or ideas were in the least disturbed, or that her advances were marked by more delicacy, *au contraire,* I am not quite sure that she was not worse. This lady always suffers from excessive menstruation, and as far as I could ascertain it was in no way increased or diminished by the course of treatment she had been subject to.

TABLE IV (a).

MALES.

Initials.	First Five Months (not taking medicine.)	2nd Five Months (taking medicine)	3rd Five Months (not taking medicine.)	4th Five Months (taking medicine)
W. M.	148	107	65	28
J. R.	69	45	55	54
J. B.	32	21	28	19
J. J.	246	91	175	88
W. L.	55	37	61	50
S. L. B.	19	24	23	30
T. H.	40	29	36	18
C. B.	52	46	34	32
R. H.	112	102	120	90
W. W.	36	37	51	61
J. L. M.	33	26	28	17
T. G.	13	4	4	2
R. G.	30	9	19	4
J. K.	25	19	17	23
E. E.	8	14	14	15
W. O.	10	10	16	42
W. M.	29	14	31	19
J. J.	8	10	5	6
	965	642	782	598

TABLE IV (b).

FEMALES.

Initials.	First Five Months (not taking medicine.)	2nd Five Months (taking medicine)	3rd Five Months (not taking medicine.)	4th Five Months (taking medicine)
S. A. P.	577	556	485	356
E. J.	25	37	97	29
E. W.	50	56	67	44
S. S.	73	37	55	53
C. S.	17	23	27	20
E. H.	29	9	21	17
M. L.	57	8	59	22
A. C.	11	22	11	8
E. G.	13	11	2	11
M. K.	60	27	16	18
M. L.	57	8	11	10
H. W.	1	0	3	5
	970	794	814	588

In these two tables are tabulated the number of fits occuring in those epileptics who have been under treatment, during the whole of the four periods of five months each over which my experiments have extended, and in my mind they prove conclusively the efficacy of the medicine; for, considering the totals only in the first five months, when the males were not under treatment, 965 fits occurred, in the second five months when they were taking it, the fits decreased to 642, then during the third five months when the medicine was omitted, they increased to 782, and then again on taking it for another five months they decreased to as few as 598. On the females side, the rise and fall was nearly as marked, being as follows, 970, 794, 814, 588. Looking more closely into these tables, it will be seen that out of 18 males under treatment, at least 14 were benefitted more or less, and that out of 12 females, there were seven who experienced a diminution in their seizures. That more males were relieved than females by the Bromide is opposed to the experience of others, and is a fact I have not been able to account for. That however it was the medicine which worked the improvement, is I submit proved tolerably conclusively by the above tables, for it will be seen that in nearly every case in which the fits were decreased by the course of treatment, they immediately increased on the suspension of it, to be however again diminished on its resumption; in such cases as W. M., J. B., J. J., S. A. P., &c., these fluctuations are very marked, but do not show the whole of the benefit they derived, as their conduct, habits and dispositions were in every way improved.

That this table does not quite accord with tables I. and II, in point of the number of cases treated, is because some few of those who appear in table I. have from various causes passed from under my care before the expiration of

the last period. Taking however, those only who are recorded in table IV. we find that out of 30 epilepties 21 have been benefitted, and it may reasonably be supposed have suffered from at least 809 fits less than they would have done, had not they taken the Bromide of Potassium.

PART III.

Regarding the effieaey of the Bromide of Potassium in Psyehieal eases, not epileptie, I have found it to be of use, ehiefly in two elasses.

1.—It is deeidedly benefieial in those cases of insanity in whieh a monomania existing for some time, has at last gained sueh hold on the intelleet, that the affective faculties also to a eertain extent become deranged, for where a monomania exists and gradually increases in intensity as time elapses, it at last eomes to exereise such control over the intelleet, that those faculties whieh exeite or give rise to emotions, become also seeondarily affeeted, and at last to sueh a degree that the patient is no longer a true monomaniae. I do not think I ean illustrate my meaning better than by relating the history of a ease we had under treatment at the Northampton General Lunatic Asylum, during the latter part of last year.

Mr. J. J., œt. 56, was by oecupation a silk manufaeturer, but when trade failed so in the Midland Counties, he gave up his business and retired on a small income to the neighbourhood of London. There was no hereditary taint of insanity in his family, or any strumous diathesis, and with the exeeption of frequent bilious head-aehes, whieh were generally relieved by a little blue pill, he had never had

any serious illness or ailment. He was a married man, but without children. His wife described him as being when well of a sanguine-nervous temperament, excitable and hasty, easily depressed, very versatile, and extremely prone to indulge in gloomy thoughts and forebodings. He had nevertheless always been a most kind, attached and faithful husband. About eighteen months before his admission into the Asylum, and two years after his retirement from active occupation, these natural traits of character became intensified, and he gradually lost all relish for society, in which he had at one time been very fond of mixing. This abnormal condition of his habits gradually developed itself into a monomania, and the monomania by slow, but sure steps induced an exalted condition of the emotional faculties, so that although he consulted Dr. Forbes Winslow and other eminent psychologists, and also travelled about to try what change of air and scene would do, his malady gradually became so very marked that it was at last necessary to place him in an Asylum. On his admission, he seemed, physically, with the exception of slight gastric derangement to be tolerably well. He was a short, but well made man, with broad sholders, deep chest, well proportioned limbs, and his body generally was well nourished. His head and features were small, but well shaped, and the expression of his countenance although depressed, was intelligent. The tongue was white and coated, the bowels irregular, generally confined, and the pulse 90 full and strong, the appetite was good, but dainty, and he generally slept well. No organic lesion could be detected, either in the thoracic organs or the abdominal viscera.

Mentally, his condition was most deplorable. He would perhaps for some minutes, converse quite freely, rationally, and cheerfully with you, when all of a sudden an expression of intense misery would come over his countenance, and his

gesticulations give evidence of the most abject terror; then, dropping on his knees, he would pray devoutly for a minute or so, and rise to renew the conversation at the point it had broken off. These fits would occur with varying frequency: sometimes he would be on his knees every few minutes, at others perhaps a quarter of an hour would pass away without one; but their occurrence seemed quite unaffected by person, place, or thing, and if the fit took him, he would drop down to pray with equal fervour, whether he was in his bed-room or in the open street. The reason he gave for this strange behaviour was that every now and then the most obscene and blasphemous thoughts and ideas would enter his mind and prompt him to the commission of all sorts of extravagant follies and wickednesses, and that his mind being naturally pure and chaste he was worried beyond measure, and that he could only find relief by immediate prayer to Almighty God. These ideas constantly recurring to his mind, seem at last to have so worked upon his intellect, that to his distorted senses they finally appeared to assume a tangible form, and he would address them, and gesticulate at them as though he saw something before him.

On admission, five grains each of *Pulv. Ipecac Co.* and *Hydrarg. c̄ Creta* were ordered to be taken at once, and an aperient the next morning, and he was to take m. xv. of *Ligr. Morphe. Acet.*, with a little *Hyoscyamus* every four hours. In addition, moral treatment was to be carried out vigorously. He was placed in the most cheerful bed-room in the house, and made to associate with the least depressed class of patients. Every inducement was held out to him to occupy his time in reading, walking, and playing games, and we devoted every spare moment I had to chess, of which he was especially fond, and in which he was a skilled adept. As regards dietetics, he was put on the most stimulating, nourishing, and withal changeable diet I could devise, and he

was urged freely to indulge in bitter ale and port wine, but all to no purpose. He became worse—more excitable, and more emotional; therefore, at the end of a fortnight, the morphia was discontinued, and 10 grains of Bromide of Potassium ordered twice daily. He almost immediately began to mend, and at the termination of six weeks residence with us, was discharged recovered. His return to a sound state of mind was marked by one or two curious facts, and seemed to be arrived at inversely as it were to the progress of the disease: thus, in the first place, he became less emotional and distressed, then he seemed to lose the fancy that his blasphemous thoughts were tangible beings, and finally he lost the ideas themselves. Now during the first stages of his illness, the psychical phenomena occurred in just the reverse order. The medicine reduced him (physically) considerably, and produced such violent purging that it had on several occasions to be omitted for a day or two.

2.—The second class are those cases of extreme nervous irritability, described by Mr. Henry Behrend in the *Lancet*, whose malady chiefly manifests itself by an utter incapacity to calm their nervousness and dread caused by some morbid idea, sufficiently to allow them to sleep. They pass night after night in restlessness and agony, and unless some favourable change is induced, gradually lapse into a state of helpless fatuity. This class may also be appositely illustrated by a case:—

Mr. G. was a master baker by occupation. He was married, and had brought up a large family, all of whom were healthy. There was no history of insanity in his family. He had at times been somewhat given to intemperance, but had been on the whole an industrious and well-conducted member of society. Some twelve months, however, before his admission into the asylum, he had become nervous, depressed, and irritable, and to drown dull care had taken to

an unwholesome use of stimulants. This only made matters worse, and soon neeessitated his temporary sojourn in an asylum.

On admission, he was extremely depressed, and in a persistent nervous tremor from apprehension of evil. He deseribed himself as being ever haunted by demons, who hovered around and threatened him, and kept him in a eonstant state of alarm. Directly he laid his head on the pillow at night, the room would seem to be peopled with them, and if he did happen to drop off to sleep, he soon awoke with a start in the greatest fright, so that he never had a proper night's rest. This state of things having gone on for some time, his physieal health was beginning to suffer, and although no distinet organie lesion could be detected, he was rapidly losing flesh, and his secretions had beeome out of order.

On admission, he was ordered an alterative and purgative, and a little tonie medieine, but beeoming no better, at the expiration of a week, gr. xx. of tho Bromide were ordered to be given every night in a little pure water. The very first night this eourse of treatment was instituted, he slept better than he had done for months, and his recovery proeeeded rapidly and uninterruptedly from that date, so that he was diseharged recovered within a month of his admission. Beyond the usual diminution in the rapidity of the pulse, no marked physical symptom aeeompanied the administration of the medieine in this ease.

PART IV.

I now eome to the last and most important division of my subjeet, and the one beset with tho greatest diffieulties, namely the rationale of the aetion of tho Bromido of Potassium, and the definition of the portions of the human orgasm influenced by it.

Epilepsy has been defined to be a chronic disease, characterised by the occasional and temporary existence of loss of consciousness, with or without evident muscular contraction; and as its chief characteristics are tonic and clonic involuntary spasm, associated with loss of consciousness, and as the functions of the medulla oblongata are to transmit impressions both motor and sensory, and to reflect certain afferent impressions, through efferent nerves to muscles, and as, moreover, Brown-Sequard's experiments on Guinea pigs have shown that after the removal of the cerebrum irritation of the medulla oblongata will cause convulsions resembling epilepsy, and Weber has demonstrated that by galvanizing the medulla oblongata and spinal cord, clonic and tonic spasm are respectively induced, it has become generally to be allowed that the proximate cause of epilepsy is exaggeration of the impressibility and increased irritability of the motor excitability of the functions of the medulla oblongata—and Dr. J. Crichton Browne,* believing in this explanation of the phenomena of epilepsy, argues with great ability that the Bromide of Potassium acts directly as a "Sedative to the medulla oblongata, soothing and modifying its functions whenever these are in excess of the normal standard," and this sedative influence he believes "to embrace alike the impressibility and motor excitability of the organ." And all my observations tend to support this theory so far as it goes; but does it go far enough? I am inclined to think not. The causes of epilepsy may be arbitrarily collected into two divisions—proximate and ultimate. The proximate cause, as has already been shown, is now allowed to be seated in the medulla oblongata, and to be due to increased excitability or irritability of the functions of that organ, but that is due to the ultimate cause, whichmust result

* *Op. Cit.*

from altered nutrition, or as has been remarked*—"Convulsions are pretty generally allowed to be modifications of vital action, and are dependent on nutrition changes in the nervous centres; the immediate and proximate cause of convulsion is the same when the convulsion is the same; the proximate cause is an abnormal *increase* in the nutrition changes of the nervous centres; the remote causes are such as induce an abnormal increase in the nutrition changes."

Following Dr. Reynolds' classification, these nutrition changes may be of four kinds.

First.—It may be idiopathic or primary, a morbus *per se* in the same way as a tubercle is due to the tubercular or carcinomatus diathesis for, as Dr. Reynolds very justly remarks, prior to the development of either tubercle or cancer as a deposit or growth we assume the existence of a tendency which will eventually reveal itself, and this is all that we assume with regard to convulsion.

Further there is nothing in the nature of convulsive phenomena which, *per se*, necessitates the supposition of anything beyond a mere modification of the ordinary healthy process, in other words there is nothing for which these processes will not account.

Secondly.—The nutrition changes may be secondary to other changes in the organism and be the result of such condition, the centripetal nerve conveying an impulse by which a change is effected in the nutrition of the nervous centre.

Thirdly.—The nutrition change may be due to a general disease, affecting the whole body, as one of the cachexiæ, and and as Dr. Reynolds says, when convulsions occur in a well-marked instance of any one of the cachexiæ it may be that they are primary or idiopathic; it may be that they are secondary or dependent on eccentric irritation of the nervous

* Review on Dr. Reynolds' work in *Journal of Mental Science.*

centres as in tubercular mennigitis. But over and above these three modes of production, there are numerous cases which require another explanation—viz., this, that the convulsions are the direct expression of the cachexia which is present, the nervous centres being involved in that general change which is the essential element of the cachexia itself.

Fourthly.—Convulsions may be due to some defined anatomical lesion, such as an intercranial tumour.

Now of these four causes of chronic convulsion, the first and third are clearly due to some defect of nutrition, or in other words, to a deviation from the healthy standard of the essential constituents of the blood. It must be quite clear that any change in the molecular constituents of the medulla oblongata, even though this change be so minute that our imperfect means fail to detect it, must affect the healthy exercise of its functions just as an increased molecular movement in an organ or tissue is commonly associated with an augmentation of its vital function, and that if the blood conveyed to the medulla oblongata be vitiated in certain ways there will be an abnormal manifestation of its functions. Take for instance cases of urinœmia as serving to illustrate our point:—Messrs. Prevost and Dumas found that by exercising the kidneys, and thus causing an accumulation of urea in the blood, that epilepsy was induced; and Dr. Todd has shown that disease of the kidneys is apt to be complicated by epilepsy. Therefore, if it be allowed that certain poisons in the blood, such as urea, give rise to convulsions, it must be evident that if the supply of blood be to a certain extent lessened, the patients will not be likely to be so frequently attacked by the fits, and it is in this way that I would explain the beneficial influence of the Bromide of Potassium over epilepsy. It has been shown that the Bromide of Potassium has a powerful sedative effect on the heart's action; may it not, therefore, be that the subduing of the frequency

of the circulation, and consequent diminution in quantity of blood sent to the brain, arrests, or at all events partially stays the abnormal increase in the nutrition changes of the nervous centres, and that the Bromide of Potassium partially counteracts the remote causes whatever they may be, which induce abnormal increase in the nutrition changes.

I don't mean by this to infer for one moment that all cases of epilepsy are due to urinœmia, or even to blood poisoning of any kind, because I know that the present state of our knowledge of the subject will not allow of such an assertion ; but* if the nature of the morbid change in epilepties is exaggeration in degree of the functional activity of the medulla oblongata and upper parts of the spinal axis, and if increased functional activity be the immediate result of augmentation in the interstitial metamorphosis of organ, and is due to inerease in the supply of arterial blood, and the size of the capillaries, and if, as Van de Kolk has demonstrated, this more rapid nutrition change gives rise to fatty degeneration of and granular deposits in the coats of the capillaries of the medulla oblongata, it surely follows that by indueing a less hastened interstitial metamorphosis, the morbid change must progress less rapidly, and consequently the abnormal results of these changes be less apparent, and this result can only be brought about by lessening the flow of blood to the part.

This theory first occurred to me from notieing the fact, which the subjoined table will show, that in nearly all the epilepties who reeeived benefit from the treatment, more or less diminution in the rapidity of the pulse followed the use of the Bromide of Potassium.

It was necessarily very difficult to reach anything but an approximate idea of the real diminution, but I endeavoured

* Dr. Reynolds: *Op. Cit.*

to arrive at the truth as nearly as possible by pursuing the following course:—I took the rate of the pulse in every epileptic under treatment each day for seven days, an hour before and an hour after the administration of the medicine, and with the following average results:—[*See Table Va.*]

From this table it will be seen that the rapidity of the pulse was affected in by far the majority of patients in whom the fits were diminished, and that in some cases the heart's beats were reduced by as many as twenty in a minute.

One lady, suffering from frequent emotional excitement, to whom I administered the medicine, was very markedly affected in this way for the first week or two she was under treatment; thus quoting from my note-book:—

March 15th.—Miss E. very voluble, emotional, and excited. Pulse 100; tolerably strong and full; ordered Bromide of Potassium, 5 grains, twice a day.

16th.—Took medicine at 10 a.m.; at 11.30 a.m., pulse about 90, feeble and irregular, now rapid, now slow; she is still emotional, but less excitable.

17th.—Headache; medicine omitted for a day.

18th.—Head better; pulse 90 before medicine, 75 afterwards; appetite good.

20th.—Pulse 80; getting excitable again; medicine increased to grains ten *bis. die.*

21st.—Pulse 64, very feeble; she is very quiet, and quite rational, but seems languid and weak, and hovers constantly over the fire.

22nd.—Pulse 64; medicine reduced.

24th.—Pulse 80.

The use of the Bromide of Potassium renders epileptics more tractable, more sociable, more amenable to the ethics of society, and less irritable and captious; less prone to be put out of temper by trivial causes. Even this can be proved by statistics, for whereas during the five months the epilepties

TABLE V (a).

MALES.

Initials.	First five Months (not taking Medicine.)	2nd five Months (taking Medicine.)	3rd five Months (not taking Medicine.)	4th five Months (taking Medicine.)	Pulsations.	
					Before Medicine.	After Medicine.
N. M.	148	107	65	28	90	70
J. R.	69	45	55	54	58	56
J. B.	32	21	28	19	80	66
J. J.	246	91	175	88	60	54
W. L.	55	37	61	50	80	64
L. L. B.	19	24	23	30	70	70
T. M.	40	29	36	18	90	68
C. B.	52	46	34	32	76	76
R. H.	112	102	120	90	90	81
W. W.	36	37	51	61	80	78
J. L. M.	33	26	28	17	76	76
I. G.	13	4	4	2	56	56
R. G.	30	9	19	4	76	64
J. K.	25	16	17	32	morbus cordis, pulse intermittant.	
E. E.	8	14	14	15	90	82
W. O.	10	10	16	42	90	90
M. M.	29	14	31	19	70	62
J. J.	8	10	5	6	56	56
	965	642	782	598		

TABLE V (b).

FEMALES.

Initials.	First Five Months (not taking Medicine).	2nd Five Months (taking Medicine).	Third Five Months (not taking Medicine).	Fourth Five Months (taking Medicine).	Pulsations.	
					Before Medicine.	After Medicine.
S. A. P.	577	556	485	135	66	56
E. J.	25	37	57	29	74	62
E. W.	50	56	67	44	80	68
S. S.	73	37	55	53	68	66
C. S.	17	23	27	20	80	80
E. H.	29	9	21	17	76	64
M. L.	57	8	59	22	86	70
A. C.	11	22	11	8	66	66
E. G.	13	11	2	11	90	86
M. K.	60	27	16	18	68	60
M. L.	57	8	11	10	66	60
H. W.	1	0	3	5	80	80
	970	794	814	588		

were not under treatment, there were 40 entries of accidents in the *Medical Journal;* during the five months they were taking the Bromide, only 25 were chronicled. This "morbid irritability," which is such a constant feature in epileptics, has been defined by Fraser* to be a state of the mind which "disposes it to be quickly acted upon by any cause of excitement," and often and often have I noticed paroxysms of convulsions brought on in epileptics by a very moderate amount of excitement. Even a gesture of ridicule, directed against such a patient, will often raise a storm of anger, and thus induce an epileptic fit. Now we may presume that a fit, under these circumstances, is brought about by an afflux of blood to the medulla oblongata through an increase in the rapidity of the circulation, caused by the burst of passion.

Again, the pathognomonic paroxysmal phenomena may be summed up briefly under three heads, viz., tonic spasm, clonic spasm, and loss of consciousness.

Tonic spasm is the "result of undue action in the medulla oblongata,"† passing downwards to the spinal cord. Clonic spasm is caused by the circulation of carbonised blood through the medulla oblongata.

Loss of consciousness is brought about by cerebral congestion, which is induced by contraction of the cerebral capillaries caused by irritation arising in the medulla oblongata, and proceeding along the vaso-motor nerves.

Now I found that comparing a fit occuring before taking medicine, with one occuring soon afterwards, in very many cases, whereas the tonic spasm was as severe, and lasted as long in one fit as another, the phenomena of clonic spasm and loss of consciousness, were decidedly ameliorated. And this I noticed so frequently as to leave no room for doubting its being *post hoc propter hoc.*

* Epilepsy and the use of the *Viscus Quercinus.*

† Dr. Reynolds, *Op. Cit.*

CONCLUSIONS.

From the preceding pages I would briefly draw the following conclusions.

1.—That the Bromide of Potassium possesses the power of moderating the frequency of epileptic paroxyms.

2.—That the power is confined to fits occurring during the day time.

3.—That its virtue is due to its sedative influence on the heart's action.

4.—That it also ameliorates the violence of the paroxysmal phenomena, and that the power is due to a like cause.

5.—That it may be used with advantage in many cases of insanity, and especially in those in which the emotions are affected.

6.—That it has no special antaphrodisiac properties.

7.—That in most persons as much as half a dram may be given at a time, but that on some constitutions, a much smaller quantity has a very deleterious effect.

8.—That doses of from twenty to thirty grains given at night, to patients suffering from extreme nervous irritability will often induce sleep, when opiates are hurtful.

9.—That in some cases it produces hypercatharsis, and that patients with such idiosyncrasies do not easily adapt themselves to its use.

And finally, I must own after twenty months careful study, and close examination of this much-vaunted medicine, that we have not yet found a specific for epilepsy. I cannot say that I am dissapointed, or much surprised, for as I already have remarked I instituted my experiments having a wholesome scepticism as to their success. That they have produced even moderate benefit is therefore all the more encouraging, for I am sure I in no way over estimate it,

when I say that our wards containing epileptics have not been like the same places since the medicine has been used, and this has been the constant remark of the nurses, attendants and more rational of the patients, and the Visiting Justices. If therefore these pages induce others in charge of hospitals for the insane to give the Bromide of Potassium a trial, and if the same benefit arises from its use as did in the Northampton Asylum, any trouble I may have taken, will indeed be amply rewarded.

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